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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,006	02/18/2004	Dae-Kwang Jung	5000-1-506	2394

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CHA & REITER, LLC
210 ROUTE 4 EAST STE 103
PARAMUS, NJ 07652

EXAMINER	
KIM, DAVID S	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/781,006	JUNG ET AL.	
	Examiner	Art Unit	
	David S. Kim	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. **Claim 12** is objected to because of the following informalities:

In claim 12, line 2, "moduates" is used where -- modulates -- may be intended.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 2-8** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Notice the following limitations in claim 2:

"a multiplexing/demultiplexing device having *a first input/output terminal and a plurality of upward signal output terminals* ***at a first side portion*** so as to receive the amplified spontaneous emission noise and to output a multi-wavelength lasing light, and a plurality of second input/output terminals and an upward signal input terminal for a multi-wavelength lasing light generation ***at the first side portion*** so as to output a multi-wavelength lasing light multiplexed in response to the input of the amplified spontaneous emission noise and to demultiplex and to output the upward signal in response to the input of the upward signal" (emphasis Examiner's).

This "first side portion" appears to refer to the left side of 650 in Fig. 3. However, this appears to be in conflict with the following limitation of claim 2:

"a plurality of reflection means coupled in one-to-one correspondence to the second input/output terminals ***at the first side portion*** of the multiplexing/demultiplexing device, so as to input demultiplexed signals outputted through the second input/output terminals back to the second input/output terminals" (emphasis Examiner's).

Here, this limitation adds "a plurality of reflection means" to "the first side portion" of the multiplexing/demultiplexing device. However, Fig. 3 shows a plurality of reflection means 655 on the *right* side of 650 in Fig. 3, not on the *left* side of 650 in Fig. 3, as the claim appears to disclose. Accordingly, claims 2-8 contain subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. As a remedy, Examiner respectfully suggests amending the claim language so that "the first side portion" under the "plurality of reflection means" limitation is changed to "a second side portion".

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Darcie et al.

5. **Claim 1** is rejected under 35 U.S.C. 102(b) as being anticipated by Darcie et al. (U.S. Patent No. 5,559,624, hereinafter "Darcie").

Regarding claim 1, Darcie discloses:

A wavelength-division-multiplexed passive optical network comprising:

a central office (CO 10 in Fig. 1) in which a multi-wavelength lasing source (20) is located;

a plurality of subscriber terminals (ONUs 100, 200, 300, 400) for transmitting an upward signal using a reflected signal (mirror/modulator 750) of a multi-wavelength signal transmitted from the central office; and

a local office (remote node 90) disposed between the central office and the subscriber terminals via optical fibers for demultiplexing the multi-wavelength signal transmitted from the central office and for multiplexing signals from each of the subscriber terminals.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Yamamoto et al.

8. **Claims 1 and 9-13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (U.S. Patent No. 5,930,015, hereinafter "Yamamoto") in view of Frigo et al. ("A wavelength-division multiplexed passive optical network with cost-shared components", hereinafter "Frigo").

Regarding claim 1, Yamamoto discloses:

A wavelength-division-multiplexed passive optical network comprising:

a central office (left side in Fig. 24)

a plurality of subscriber terminals (implied plurality of terminals on right side) for transmitting an upward signal using a reflected signal (signals reflect in amplifiers of Fig. 24, as shown by semiconductor laser amplifier in Fig. 2) of a multi-wavelength signal transmitted from the central office; and

a local office (221 in Fig. 24) disposed between the central office and the subscriber terminals via optical fibers for demultiplexing the multi-wavelength signal transmitted from the central office and for multiplexing signals from each of the subscriber terminals.

Yamamoto does not expressly disclose:

a central office ***in which a multi-wavelength lasing source is located***;

Rather, Yamamoto discloses a plurality of wavelength lasing sources 61, 62, and 63 in Fig. 10. However, the practice of employing a central office with a multi-wavelength lasing source is known in the art, as shown by the tunable laser in the central office of Frigo (p. 1365, col. 1, last paragraph). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to locate a multi-wavelength lasing source in the central office of Yamamoto. One of ordinary skill in the art would have been motivated to do this to replace the high cost of using a plurality of wavelength lasing sources in the central office (Frigo, p. 1365, col. 1, INTRODUCTION, note the costliness of a plurality of lasers).

Regarding claim 9, Yamamoto in view of Frigo discloses:

A wavelength-division-multiplexed passive optical network as claimed in claim 1, wherein the subscriber terminal includes a reflective optical amplification means (Yamamoto, semiconductor laser amplifier in Fig. 2).

Regarding claim 10, Yamamoto in view of Frigo discloses:

A wavelength-division-multiplexed passive optical network as claimed in claim 9, wherein the reflective optical amplification means is a reflective semiconductor optical amplifier (Yamamoto, semiconductor laser amplifier in Fig. 2).

Regarding claim 11, Yamamoto in view of Frigo discloses:

A wavelength-division-multiplexed passive optical network as claimed in claim 10, wherein the reflective semiconductor optical amplifier comprises an anti-reflection coating face formed on one side (Yamamoto, 47 in Fig. 5), a high-reflection coating face formed on another side (46), and a gain medium formed between the anti-reflection coating face and the high-reflection coating face (medium between 46 and 47), so that the semiconductor optical amplifier total-reflects a signal inputted through the anti-

reflection coating face by the high-reflection coating face and outputs the total-reflected signal (output 36).

Regarding claim 12, Yamamoto in view of Frigo discloses:

A wavelength-division-multiplexed passive optical network as claimed in claim 11, wherein the semiconductor optical amplifier further amplifies and modulates the signal when the signal passes the gain medium (Yamamoto, col. 7, l. 55-62).

Regarding claim 13, Yamamoto in view of Frigo discloses:

A wavelength-division-multiplexed passive optical network as claimed in claim 9, wherein the subscriber terminal further comprises an optical distributor (Yamamoto, 224 in Fig. 24) and a broadcasting data optical receiver (Yamamoto, μ receiver) so as to receive a broadcasting service signal, the optical distributor distributing downward signals inputted from the local office to the reflective optical amplification means and the broadcasting data optical receiver.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fuse et al. is cited to show the use of a broadcast service signal in an optical network. Zirngibl is cited to show a wavelength-division-multiplexed (WDM) passive optical network (PON). Suzuki et al. is cited to show reflection type optical modulators (e.g., Figs. 19B-20). Darcie et al. '234 is cited to show the use of a broadcast signal in a WDM PON. Lu et al. is cited to show the use of a broadcast signal in a WDM optical network. Yamamoto et al. '803 is cited to show a WDM PON. Iannone et al. is cited to show the use of a broadcast signal in a WDM optical network. Chung et al. is cited to show a WDM PON. Lee et al. is cited to show a multi-channel WDM light source.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 571-272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth N. Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DSK

KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER